

## CLAIMS

What is claimed is:

1. A gateway exchange node, comprising:

an exchange area network (XAN) xswitch; and

5 a wide area network (WAN) wavelength switch coupled to the XAN xswitch.

2. The gateway exchange node of Claim 1, wherein the XAN xswitch supports

Ethernet and synchronous optical network (SONET) switching.

10 3. The gateway exchange node of Claim 1, wherein the XAN xswitch comprises

a packet switch that performs media access control (MAC) layering networking.

4. The gateway exchange node of Claim 1, wherein the WAN wavelength switch

supports wavelength switching.

15 5. The gateway exchange node of Claim 4, wherein the WAN wavelength switch

implements dense wavelength division multiplexing (DWDM).

6. The gateway exchange node of Claim 1, further comprising a digital

20 crossconnect system (DCS) coupled to the XAN xswitch and the WAN wavelength

switch.

7. The gateway exchange node of Claim 1, further comprising an internet protocol (IP) switch router coupled to the XAN xswitch and the WAN wavelength switch.

5           8. The gateway exchange node of Claim 1, further comprising a voice switch coupled to the XAN xswitch.

9. The gateway exchange node of Claim 1, further comprising a data switch coupled to the XAN xswitch.

10           10. The gateway exchange node of Claim 9, wherein the data switch is an Asynchronous Transfer Mode (ATM) switch.

15           11. The gateway exchange node of Claim 1, further comprising a multimedia access head end coupled to the XAN xswitch.

12. The gateway exchange node of Claim 1, further comprising a server coupled to the XAN xswitch.

20           13. The gateway exchange node of Claim 1, further comprising a local distribution node coupled to the XAN xswitch.

14. The gateway exchange node of Claim 1, further comprising an integrated access device (IAD) coupled to the XAN xswitch.

15. The gateway exchange node of Claim 1, further comprising an intercity network coupled to the WAN wavelength switch.

16. A network, comprising:  
a first gateway exchange node having an exchange area network (XAN) xswitch and a wide area network (WAN) wavelength switch; and  
a network operations center (NOC) coupled to the gateway exchange node.

17. The network of Claim 16, wherein the NOC is coupled to the gateway exchange node via an internet protocol (IP) switch router.

18. The network of Claim 16, further comprising a second gateway exchange node coupled to the first gateway exchange node via the WAN wavelength switch.

19. The network of Claim 16, further comprising a local distribution node coupled to the first gateway exchange node via the XAN xswitch.

20. A gateway exchange node, comprising:  
an exchange area network (XAN) xswitch;  
a wide area network (WAN) wavelength switch;

a digital crossconnect system (DCS);

a data switch;

a voice switch; and

an internet protocol (IP) switch router.

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21. The gateway exchange node of Claim 20, wherein the XAN xswitch, WAN wavelength switch, DCS, data switch, voice switch, and IP switch router all include an operating system for networking.

22. The gateway exchange node of Claim 20, wherein the WAN wavelength switch, DCS, data switch, voice switch, and IP switch router all include a service delivery point.